from which

/*$_5$ = 0 m 716 CD and fc JL™^?§6 $_=$ o mm 155.

The total of these pressures and losses will be

1. In the ash pit..... <5i =0 mm 016
2. In the grate openings..... 62 = 0 046
3. In the fuel bed..... <5$_3$ = 0 090
4. In the upper part of the firebox.... 54 = 0 027
5. Over the bridge wall..... *85* = 0 155

8 =0 mm 334

Therefore, the hydrostatic pressure required at the level of the grate will be, as a minimum, + 0 mm 334 of water column.

At the temperature £=1200°, the weight of 1 cu m of gas in the furnace will be

Therefore a column of this gas 1 m in height will give a hydrostatic pressure of

1.29-0.246 = 1 mm 044 of water.

Then, using *x* to express the height in millimeters of the column of gases corresponding to the 'pressure of a water column of 0 mm 334 in height, the following proportion can be written :

$$\frac{x}{1000} = \frac{0.334}{1.044}$$

from which : *x* = 3 19 mm, which is the minimum vertical distance of the grate bars below the hearth of the furnace.

(e) Waste Gas or Smoke Flue.— As the hot gases from the furnace are to be passed under a boiler, there is no necessity for increasing their velocity of flow. Increasing their velocity would necessitate a decrease in the gas pressure below the boiler by means of the draft supplied by the chimney. But such a decrease in the pressure is always accompanied by the sucking in of the cold outside air, which reduces the temperature of the gases and decreases the production of steam; it is therefore desirable to

(1) Refer to Appendix III.